A

Accessory
A building product that supplements a basic solid panel building such as a door, window, skylight,
ventilator, etc.

Agricultural Building
A structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other
horticultural products. Such structure shall not include habitable or occupiable spaces, spaces in which
agricultural products are processed, treated or packaged; nor shall an agricultural building be a place of
occupancy by the general public.

AISC
American Institute of Steel Construction

Aluminum
A corrosion resistant metallic element. Aluminum alloy coated sheet is often used for metal roofing and
wall panels.

Anchor Bolt Plan
A plan view drawing showing the diameter, location and projection of all anchor rods for the components of the Metal Building System and may show column reactions (magnitude and direction). The maximum
base plate dimensions may also be shown.

Anchor Bolt/Rods
The term “anchor rod” is used for threaded rods embedded in concrete to anchor structural steel. The term “rod” is intended to clearly indicate that these are threaded rods, not structural bolts, and should be
designed as threaded parts using the material specified in the latest edition of AISC. The embedded end
of the rod may be secured in the concrete by means of a head, threading with a nut on the end, a hook or
other deformation, by welding to reinforcing steel or other means.

Approval Drawings
A set of drawings that may include framing plans, elevations and sections through the building for approval of the buyer.

Architectural Panel
Any panel that has a primary purpose of the aesthetic enhancement of a building or structure.

ASD
Allowable Stress Design.

Astragal
A closure between the two leaves of a double swing or double slide door.

Automatic Crane
A crane which when activated operates through a pre-set cycle or cycles.

Auxiliary Crane Girder
A girder arranged parallel to the main girder for supporting the platform, motor base, operator's cab, control panels, etc., to reduce the torsional forces that such load would otherwise impose on the main crane girder.

Auxiliary Hoist
A supplemental hoisting unit, usually designed to handle lighter loads at a higher speed than the main
crane hoist.

Auxiliary Loads
Dynamic live loads such as those induced by cranes and material handling systems.

Axial Force
A force tending to elongate or shorten a member.

B

Bar Joist
A name commonly used for "Open Web Steel Joists".

Base Angle
An angle secured to a wall or foundation used to attach the bottom of the wall paneling.

Base Flashing
The lower flashing component of a two component metal flashing detail. The component flashing details
are often used either for expedience or to allow differential thermal movement between building elements or accessories. The lower component is the "base" flashing; the upper component is the "counter-flashing".

Base Plate
A plate attached to the bottom of a column that rests on a foundation or other support, usually secured by
anchor rods.

Base Tube
A continuous member imbedded in the edge of the foundation to which the wall panels are attached.

Batten
A strip of wood common to non-structural panels that is used to support the vertical ribs of adjacent metal
panels.

Batten Cover
1. A separate strip of metal used to cover the wood batten, and join the vertical ribs of adjacent metal
panels on either side of the batten.
2. A strip of formed metal used to span the void area and join the vertical legs of adjacent metal panels.

Batten Seam
1. A metal panel profile attached to and formed around a wood or metal batten,
2. A metal panel profile that imitates the traditional batten seam system but omits the wooden batten.

Bay
The space between the main frames measured normal to the frame.

Beam
A member, usually horizontal, that is subjected to bending loads. There are three types, simple,
continuous, and cantilever.

Beam and Column
A structural system consisting of a series of rafter beams supported by columns. Often used as the end
frame of a building.

Bearing Hot Rolled
Also referred to as a Bearing End Frame or Bearing Frame Endwall (BFEW). A Bearing Hot Rolled is a
structural system consisting of a series of hot rolled rafter beams supported by hot rolled columns
connected by a series of pinned connections. Often used as the end wall framing of a building.
See “Beam and Column”

Bearing Plate
A steel plate that is set on the top of a masonry support on which a beam or purlin can rest.

Bill of Materials
A list that enumerates by part number or description each piece of material or assembly to be shipped.
Also called tally sheet or shipping list.

Bird Screen
Wire mesh used to prevent birds from entering the building through ventilators and louvers.

Blanket (batt) Insulation
A layer or sheet of flexible fiberglass thermal insulation.

Blind Rivet
A small headed pin with expandable shank for joining light gage metal. Typically used to attach flashing,
gutter, etc.

Bracing
Rods, angles or cables used in the plane of the roof and walls to transfer loads, such as wind, seismic
and crane thrusts to the foundation.

Bracket
A structural support projecting to a structural member. Examples are canopy brackets,

lean-to brackets,
and crane runway brackets.

Bridge (Crane)
That part of an overhead crane consisting of girders, trucks, end ties, walkway and drive mechanism which
carries the trolley and travels in a direction parallel to the runway.

Bridge Crane
A load lifting system consisting of a hoist that moves laterally on a beam, girder or bridge, which in turn
moves longitudinally on a runway, made of beams and rails.

Bridging
Bracing or systems of bracing used between structural members.

Building Code
Regulations established by a recognized agency describing design loads, procedures and construction
details for structures usually applying to a designated political jurisdiction (city, county, state, etc.).

Building Envelope
The elements of a building that enclose conditioned spaces through which thermal energy is capable of
being transferred.

Building Type
There are two types of Buildings “Stand Alone” buildings and “Attachment” buildings. Stand Alone
A Stand Alone building is any building in a project that does not attach to any other building in the same
project. The first building entered in a new project is always a Stand Alone building because there are no
other building to which it could attach. A Stand Alone building can be added to the project and located so
that it does not interfere with other buildings in the project. Attachment An Attachment is a building which will attach to any other building in the project. An attachment can be a Lean-to, single slope or gabled building. Attachments can be

made Endwall-to-Endwall, Sidewall-to-Sidewall, Endwall-to-Sidewall or Sidewall-to-Endwall. The frames of an attachment that is a lean-to must line up with the columns lines of the building to which it attaches. Any other building type can attach to another building anywhere along the wall to which it attaches.

Built-Up Roofing
A roof covering made up of alternating layers of tar and asphaltic materials or layers (plies) of organic or
synthetic fabric.

Built-Up Section
A structural member, usually an I-shaped section, made from individual flat plates welded together.

Butyl Tape
A common abbreviation for polyisobutylene-isoprene polymer sealant tape used between metal roof panel and flashing joints.

Bypass Girt
See “Exterior Framed”.

C

“C” Section
A member formed from steel sheet in the shape of a block “C”, that may be used either singularly or back
to back.

Canopy
A projecting roof system that is supported and restrained at one end only.

Cantilever Beam
A beam supported only at one end having a free end and a fixed end.

Capacity
The maximum load (usually stated in tons) that a crane is designed to support.

Caulking
Filling the joints, seams or voids between adjacent units with a sealant in order to

make them
weathertight.

Channel, Hot Rolled
A C-shaped member formed while in a semi-molten state at the steel mill to a shape having standard
dimensions and properties.

Cladding
The exterior metal roof and wall paneling of a Metal Building System. See also “Components and
Cladding”.

Cleat
A sheet metal strip used in concealed fashion to secure panels or flashing that permits some limited
degree of thermal response.

Clip
A plate or angle used to fasten two or more members together.

Closure Strip
A resilient strip, formed to the contour of ribbed panels and used to close openings created by ribbed
panels joining other components.

Coil Coating
The application of a finish to a coil of metal sheet using a continuous mechanical coating process.

Cold Forming
The process of using press brakes or rolling mills to shape steel into desired cross sections at room
temperature.

Cold Rolled
The process of forming sheet steel into desired shapes on a series of rollers at ambient room
temperatures.

Collateral Loads
The weight of additional permanent materials required by the contract, other than the Building System,
such as sprinklers, mechanical and electrical systems, partitions and ceilings.

Column
A main member used in a vertical position on a building to transfer loads from main roof beams, trusses,
or rafters to the foundation.

Components and Cladding
For wind load considerations, members that do not qualify as part of a Main Wind Force Resisting
System. They include girts, joists, purlins, studs, wall and roof panels, fasteners, end wall columns and
end wall rafters of bearing end frames, roof overhang beams, canopy beams, and masonry walls when
acting as other than shear walls.

Concealed Clip
A hold down clip used with a wall or roof panel system to connect the panel to the supporting structure
without exposing the fasteners on the exterior surface.

Conditioned Space
1. Cooled space: an enclosed space within a building that is cooled by a cooling system whose sensible
output capacity is greater than or equal to 5 Btu/h·ft of floor area.
2. Heated space: an enclosed space within a building that is heated by a heating system whose output
capacity is greater than or equal to 5 Btu/h·ft of floor area.
3. Semi-heated space: an enclosed space within a building that is heated by a heating system whose
output capacity is greater than or equal to 3.4 Btu/h·ft of floor area but is not a conditioned space.

Connection
The means of attachment of one structural member to another.

Continuous Beam
A beam of variable geometry passing over two supports with overhang on one end or passing over three
supports.

Contract Documents
The Documents that define the material and work to be provided by a Contractor or the General Contractor for a Construction Project.

Cool Roof Color
The color coating on or self color of the roofing material that gives it a high solar reflectance and a high
thermal Emittance.

Cooling Degree Day (CDD)
The difference in temperature between the outdoor mean temperature over a 24-hour period and a given
base temperature. For example, using a base temperature of 65° F a day with 85° F mean temperature
has 20 CDD (85-65=20). The annual Cooling Degree Days are the sum of the degree days over a calendar year.

Coped Flashing
A sheet metal flashing, cut or formed to the contour of ribbed panels and used to close openings created
by ribbed panels joining other components.

Copper
A natural weathering metal used in architectural metal roofing; typically used in 16 or 20 oz. per square
foot thickness (4.87 or 6.10 kg/square meter)

Cornice
A decorative finish or flashing that accents the top of a wall, or the juncture of a roof and wall.

Counterflashing
Formed metal or elastomeric flashing secured on or into a wall, curb, pipe, rooftop unit, or other surface, to cover and protect the upper edge of the base flashing and its

associated fasteners from exposure to the
weather.

Covering
See “Cladding.”

Crane
A machine designed to move material by means of a hoist.

Crane Class
Crane Manufacturers of America Association (CMAA) has established six categories of crane service
classification as a guide for determining the service requirements of a specific crane application. For more
information about Crane Service Classifications, see the MBMA handbook section II, subsection 2.9.1

Class A (**Standby or infrequent use)** This service class covers cranes used in installations such
as powerhouses, public utilities, turbine rooms, motor rooms and transformer stations where
precise handling of equipment at slow speeds with long, idle periods between lifts are required.
Capacity loads are handled for initial installation of equipment and for infrequent maintenance.

Class B (Light Service) This service class covers cranes used in repair shops, light assembly
operations, service buildings, light warehousing, etc. where service requirements are light and the
speed is slow. Loads vary from no load to occasional full rated loads with two to five lifts per hour,
averaging 10 feet per lift.

Class C (Moderate Service) This service class covers cranes used in machine shops or paper
mill machine rooms, etc. where service requirements are moderate. In this type of service, the
crane handles loads that average 50 percent of the rated capacity with five to ten lifts

per hour,
averaging 15 feet, not over 50 percent of the lifts at rated capacity.

Class D (Heavy service) This service class covers cranes used in heavy machine shops, foundries, fabricating plants, steel warehouses, container yards, lumber mills, etc., and the
standard duty bucket and magnet operations where heavy duty production is required. In this type
of service, loads approaching 50 percent of the rated capacity are handled constantly during the
working period. High speeds are used for this type of service with 10 to 20 lifts per hour averaging
15 feet, not over 65 percent of the lifts at rated capacity.

Class E (Severe service) (Mill Duty) This type of service requires a crane capable of handling
loads approaching a rated capacity throughout its life. Applications may include magnet, bucket,
magnet/bucket combination cranes for scrap yards, cement mills, lumber mills, fertilizer plants,
container handling, etc., with twenty or more lifts per hour at or near the rated capacity.

Class F (Continuous severe service) (Mill Duty) This type of service requires a crane capable
of handling loads approaching rated capacity continuously under severe service conditions
throughout its life. Applications may include custom designed specialty cranes essential to
performing the critical work tasks affecting the total production facility. These cranes must provide
the highest reliability with special attention to ease of maintenance features.

Crane Girder
The principal horizontal beams of the crane bridge which supports the trolley and is supported by the end
tracks.

Crane Rail
A track supporting and guiding the wheels of a bridge crane or trolley system. On

underhung cranes, the
crane rail also acts as the runway beam.

Crane Runway Beam
The member that supports a crane rail and is supported by columns or rafters depending on the type of
crane system. On underhung bridge cranes, the runway beam also acts as the crane rail.

Crane Span
The horizontal distance center-to-center of runway beams.

Crane Stop
A device to limit travel of a trolley or crane bridge. This device normally is attached to a fixed structure and normally does not have energy-absorbing ability.

Crane Support Column
A column that sets under the runway beam and next to frame column with bracing to frame column for
lateral support.

Crane System Type
1. Top Running (TRE) (Top Running Electric)
2. Underhung (UHE) (Underhung Electric) – Typically crane capacities up to about 15 tons
3. Monorail – Typically crane capacities up to about 10 tons

Curb
A raised edge on a concrete floor slab.

Curb, Roof
An element used to raise a wall, flashing or accessory item above the drainage plane of a roof.

Curtain Wall
Perimeter wall panels that carry only their own weight and wind load.

D

Damper
A baffle used to open or close the throat of ventilators.

Dead Load
The weight of the Building System construction consisting of members such as framing and covering.

Deck
A flat structural element that is fastened to the roof framing members, typically corrugated metal sheets or
plywood. It acts as the substrate for non-structural roof panels.

Deflection
The displacement of a structural member relative to its supports due to applied loads. Deflection should
not be confused with “Drift”.

Design Loads
The loads expressly specified in the contract documents that the Metal Building System is designed to
safely resist.

Design Professional
The Architect or Engineer responsible for the design of a Construction Project.

Diaphragm Action
The resistance to racking generally offered by the panels, fasteners, and members to which they are
attached.

Door Guide
An angle or channel used to stabilize or keep plumb a sliding or rolling door during its operation.

Double Lock Standing Seam
A standing seam in which the female component of the seam is wrapped and folded approximately 360
degrees around the male seam component. (The male component is interlocked and usually folded 180
degrees). See “Standing Seam”.

Downspout
A vertical conduit used to carry runoff water from a scupper, conductor head or gutter of a building to a
lower roof level, or to the ground or storm water runoff system.

Drift (Sidesway)
Horizontal displacement at the top of a vertical element due to lateral loads. Drift should not be confused
with “Deflection”.

Drift (Snow)
The snow accumulation at a height discontinuity.

Drift Pin
A tapered pin used during erection to align holes in steel members to be connected by bolting.

Drip Edge
A metal flashing, with an outward projecting lower edge, intended to control the direction of dripping water
and to protect underlying building components.

E

Eave
The line that is usually parallel to the ridge line formed by the intersection of the planes of the roof and
wall.

Eave Height
The vertical dimension from finished floor to the eave.

Eave Strut
A structural member located at the eave of a building that supports roof and wall paneling and may act as
a strut to transfer bracing loads to frames.

Elastic Design
A design concept utilizing the proportional behavior of materials when all stresses are limited to specified
allowable values in the elastic range.

Electric Operated Crane
A crane in which the bridge, hoist or trolley is operated by electric power.

Electric Overhead Traveling Crane
An electrically-operated machine for lifting, lowering and transporting loads, consisting of a movable bridge carrying a fixed or movable hoisting mechanism and traveling on an overhead runway structure.

End Bay
The bays adjacent to the endwalls of a building. Usually the distance from the endwall to the first interior
main frame measured normal to the endwall.

End Frame
A frame located at the endwall of a building that supports the loads from a portion of the end bay.

End Stop
Bumpers or wheel stops attached to the end of the crane runway to prevent the crane from driving off the
end of the runway. These are provided by the rail vendor only.

End Truck
The unit consisting of truck frame, wheels, bearings, axles, etc., which supports the bridge girder(s) and
allows movement along the length of the runway structure.

Endwall
An exterior wall that is parallel to the interior main frame of the building.

Endwall Column
A vertical member located at the endwall of a building that supports the girts. In beam and column end
frames, endwall columns also support the beam. Also referred to as a “Wind Column”

Endwall Overhang
The projection of the roof beyond the plane of the endwall.

Endwall Type
Refers to the type of framing that is used at and endwall.

Engineer/Architect of Record
The engineer or architect who is responsible for the overall design of the building project. The
manufacturer's engineer is typically not the Engineer of Record.

Erection
The on-site assembling of fabricated Metal Building System components to form a completed structure.

Erection Bracing
Materials used by erectors to stabilize the building system during erection.

Erection Drawings
Roof and wall erection (framing) drawings that identify individual components and accessories furnished by the manufacturer in sufficient detail to permit proper erection of the Metal Building System.

Erector
A party who assembles or erects a Metal Building System.

Expansion Cleat
A cleat designed to accommodate thermal movement of the metal roof panels.

Expansion Joint
A break or space in construction to allow for thermal expansion and contraction of the materials used in
the structure.

Exterior Framed
A wall framing system where the girts are mounted on the outside of the columns.

F

Fabrication
The manufacturing process performed in a plant to convert raw material into finished Metal Building
System components. The main operations are cold forming, cutting, punching, welding, cleaning and
painting.

Façade
An architectural treatment, partially covering a wall, usually concealing the eave and/or the rake of the
building.

Fascia
A decorative trim or panel projecting from the face of a wall.

Field
1. The uninterrupted principle area of a roof, exclusive of edges, accessory and other flashing areas.
2. The “job site” or “building site”.
3. General marketing area.

Fixed Clip
A standing seam roof system hold down clip that does not allow the roof panel to move independently of
the roof substructure.

Fixed Base
A column base that is designed to resist rotation as well as horizontal or vertical movement.

Flange
The projecting edge of a structural member.

Flange Brace
A member used to provide lateral support to the flange of a structural member.

Flashing Collar
A counterflashing used to cover and/or seal the top of a pipe flashing or other small base flashing at
penetrations through the roof.

Floating Clip
See “Sliding Clip”.

Floor Live Load
Those loads induced on the floor system by the use and occupancy of the building.

Flush Frames
A wall framing system where the outside flange of the girts and the columns are flush.

Footing
A pad or mat, usually of concrete, located under a column, wall or other structural member, that is used to
distribute the loads from that member into the supporting soil.

Foundation
The substructure that supports a building or other structure.

Framed Opening
Framing members and flashing that surround an opening.

G

G90
A typical coating weight for galvanized metal sheet. Equates to 0.90 oz. (26g) of zinc per square foot,
measured in both front and back surfaces. Other coating weights are G30 and G60.

Gable
The triangular portion of the endwall from the level of the eave to the ridge of the roof.

Gable Overhang
See “End Wall Overhang”.

Gable Roof
A roof consisting of two sloping sides that form a ridge and a gable at each end.

Gage
The distance between adjacent lines of fasteners along which pitch is measured, or the

distance from the
back of an angle or other shape to the first line of fasteners.

Galvalume®
A proprietary trade name for a coating, used over sheet steel, that is composed of an aluminum-zinc alloy
for corrosion protection.

Galvanized
Steel coated with zinc for corrosion resistance.

Gantry Crane
A crane similar to a top running crane except one side of the bridge is supported by one or more gantry
legs that ride on a rail attached to the floor, while the other side's end truck rides on a runway beam.

Gauge
The thickness of sheet metal.

Girder
A main horizontal or near horizontal structural member that supports vertical loads. It may consist of
several pieces.

Girt
A horizontal structural member that is attached to sidewall or endwall columns and supports paneling.

Glaze
The process of installing glass in windows and doors.

Grade
The term used when referring to the ground elevation around a building.

Grade Beam
A concrete beam around the perimeter of a building.

Ground Snow Load
The probable weight of snow on the ground for a specified recurrence interval exclusive of drifts or sliding snow.

Grout
A mixture of cement, sand and water used to fill cracks and cavities. Sometimes used under base plates or leveling plates to obtain uniform bearing surfaces.

Gusset Plate
A steel plate used to reinforce or connect structural elements.

Gutter
A light gauge metal member at an eave, valley or parapet designed to carry water from the roof to downspouts or drains.

H

“H” Section
A steel member with a cross section in the shape of an “H”.

Hair Pin
“V” shaped reinforcing steel used to transfer shear in the anchor rods to the concrete floor mass.

Haunch
The deepened portion of a column or rafter designed to accommodate the higher bending moments at
such points. (Usually occurs at the intersection of column and rafter.)

Haunch Brace
A diagonal member from the intersection of the column and rafter section of the rigid frame to the eave
member to prevent lateral buckling of the haunch.

Header
The horizontal framing member located at the top of a framed opening.

Hem
The edge created by folding metal back on itself.

High Strength Bolts
Any bolt made from steel having a tensile strength in excess of 100,000 pounds per square inch.

High Strength Steel
Structural steel having a yield stress in excess of 36,000 pounds per square inch.

Hip
The line formed at the intersection of two adjacent sloping planes of a roof.

Hip Roof
A roof that is formed by sloping planes from all four sides.

Hoist
A mechanical lifting device usually attached to a trolley that travels along a bridge, monorail or jib crane.
May be chain or electric operated.

Horizontal Guide Rollers
Wheels mounted near the ends of end trucks that roll on the side of the rail to restrict lateral movement of
the crane.

Hot-Rolled Shapes
Steel sections (angles, channels, S-shapes, W-shapes, etc.) which are formed by rolling mills while the
steel is in a semi-molten state.

I

“I” Beam
See “S” Shape.

IBC
International Building Code.

Ice Dam
A buildup of ice that forms a dam on the roof covering along the eave of the building.

Impact Load
A dynamic load resulting from the motion of machinery, elevators, craneways, vehicles, and other similar
moving forces. See Auxiliary Loads.

Impact Wrench
A power tool used to tighten nuts on bolts.

Importance Factor
A factor that accounts for the degree of hazard to human life and damage to property.

Insulation
Any material used in building construction to reduce heat transfer.

J

Jack Beam
A beam used to support another beam, rafter or truss and eliminate a column support.

Jamb
The vertical framing members located at the sides of an opening.

Jib Crane
A cantilevered or suspended beam with hoist and trolley. This lifting device may pick up loads in all or part of a circle around the column to which it is attached.

Jig
A device used to hold pieces of material in a certain position during fabrication.

Joist
Light beam for supporting a floor or roof.

K

Kick-Out (Elbow) (Turn-Out)
An extension attached to the bottom of a downspout to direct water away from a wall.

Kip
A unit of measure equal to 1,000 pounds.

Knee
The connecting area of a column and rafter of a structural frame such as a rigid frame.

Knee Brace
A diagonal member at a column and rafter intersection designed to resist horizontal loads.

L

Lap Joint
A joint where one roof panel or flashing segment overlaps another.

Lean-To
A structure having only one slope and depending upon another structure for partial support.

Length
The dimension of the building measured perpendicular to the main framing from end wall to end wall.

Leveling Plate
A steel plate used on top of a foundation or other support on which a structural column can rest.

Lift (Crane)
Maximum safe vertical distance through which the hook, magnet, or bucket can move. Also referred to as
“Hook Height”

Lifting Devices (Crane)
Buckets, magnets, grabs and other supplemental devices, the weight of which is to be considered part of
the rated load, used for ease in handling certain types of loads.

Liner Panel
A metal panel attached to the inside flange of the girts or inside of a wall panel.

Live Load
See “Roof or Floor Live Load”.

Longitudinal
The direction parallel to the ridge or sidewall.

Longitudinal (Crane)
Direction parallel to the crane runway beams.

Louver
An opening provided with fixed or movable, slanted fins to allow flow of air.

Low Rise Building
A description of a class of buildings usually less than 60′ eave height. Commonly, they are single story,
but do not exceed 4 stories.

M

Main Frame
An assemblage of rafters and columns that support the secondary framing members and transfer loads
directly to the foundation.

Mansard
A steep sloped (almost vertical) real or mock roof element on the perimeter of a building. Originated by
the French architect, Francois Mansart.

Manufacturer's Engineer
An engineer employed by a manufacturer who is in responsible charge of the structural design of a Metal
Building System fabricated by the manufacturer. The manufacturer's engineer is typically not the
Engineer of Record.

Masonry
Anything constructed of materials such as bricks, concrete blocks, ceramic blocks, and concrete.

Mastic
See "Sealant".

MBMA
Metal Building Manufacturers Association.

Metal Building System
A complete integrated set of mutually dependent components and assemblies that form a building
including primary and secondary framing, covering and accessories, and are manufactured to permit
inspection on site prior to assembly or erection.

Mezzanine
An intermediate level between floor and ceiling occupying a partial area of the floor space.

Miter
The joint produced by joining two diagonally cut pieces, or the act of making such a cut.

Moment
The tendency of a force to cause rotation about a point or axis.

Moment Connection
A connection designed to transfer moment as well as axial and shear forces between connecting
members.

Monolithic Construction
A method of placing concrete grade beam and floor slab together to form the building foundation without
forming and placing each separately.

Monorail Crane
A crane where the hoist and trolley ride on a single S-shaped runway beam. Similar to an underhung crane, except a Monorail has only one runway beam and no bridge span and is limited to movement in
one axis.

Multi-Gable Building
Buildings consisting of more than one gable across the width of the building.

Multi-Span Building
Buildings consisting of more than one span across the width of the building. Multiple

gable buildings and
single gable buildings with interior columns are examples.

Multiple Girder Crane
A crane that has two or more girders for supporting the lifted load.

N

NBC
National Building Code.

Neoprene
A synthetic rubber (polychloroprene) used in liquid-applied and sheet-applied elastromeric roof membranes or flashings. Also once used as gasketing material beneath the head of metal screw fasteners (although most now use EPDM).

Non-Structural Panel
Panels which are not generally designed to carry loads and are not normally capable of spanning between structural supports without benefit of substrate materials such as wood, metal or concrete decks. Applied snow, dead, live, concentrated and wind loads are resisted by the support substrate.

O

Oil Canning
A waviness that may occur in flat areas of light gage, formed metal products. Structural integrity is not
normally affected by this inherent characteristic and therefore is only an aesthetic issue.

Open Web Steel Joists
Light weight truss.

Overhanging Beam
A simply supported beam that extends beyond its support.

P

Pan
The bottom flat part of a roof panel, which is between the ribs of the panel.

Pan Panel
A panel that has a broad flat surface with vertical sides and no space between the edge profile.

Panel Notch
A notch or block out formed along the outside edge of the floor slab to provide support for the wall panels
and serve as a closure along their bottom edge.

Parapet
That portion of the vertical wall of a building that extends above the roof line.

Peak
The uppermost point of a gable.

Peak Sign
A sign attached to the peak of the building at the endwall identifying the building manufacturer.

Pendant-Operated Crane
Crane operated from a pendant control unit suspended from the crane.

Personnel Doors
A swinging door used by personnel for access to and exit from a building.

Piece Mark
A number given to each separate part of the building for erection identification. Also called mark number and part number.

Pier
A concrete structure designed to transfer vertical load from the base of a column to the footing.

Pig Spout
A sheet metal section designed to direct the flow of water out through the face of the gutter rather than through a downspout.

Pilaster
A reinforced or enlarged portion of a masonry wall to provide support for roof loads or lateral loads on the
wall.

Pinned Base
A column base that is designed to resist horizontal and vertical movement, but not rotation.

Pin Connection
A connection designed to transfer axial and shear forces between connecting members, but not moments.

Pitch
The peak height of a gabled building divided by its overall span.

Ponding
1. The gathering of water at low or irregular areas on a roof.
2. Progressive accumulation of water from deflection due to rain loads.

Portal Frame
A rigid frame so designed that it offers rigidity and stability in its plane. It is generally used to resist longitudinal loads where other bracing methods are not permitted.

Post
See “Column”.

Post and Beam
See “Beam and Column”.

Power Actuated Fastener
A device for fastening items by the utilization of a patented device which uses an explosive charge or compressed air to embed the pin in the concrete or steel.

Pre-Painted Coil
Coil of metal that has received a paint coating.

Purlin
A horizontal structural member that supports roof covering.

R

Rafter
The main beam supporting the roof system.

Rails (Door)
The horizontal stiffening members of framed and paneled doors.

Rake
The intersection of the plane of the roof and the plane of the endwall.

Rake Angle
Angle fastened to purlins at rake for attachment of endwall panels.

Rake Trim
A flashing designed to close the opening between the roof and endwall panels.

Reactions
The resisting forces at the column bases holding the structure in equilibrium under a given loading
condition.

Reinforcing Steel
The steel placed in concrete as required to carry the tension, compression and shear stresses.

Retrofit
The placing of new metal roof or wall systems over deteriorated roofs or walls.

Rib
The longitudinal raised profile of a panel that provides much of the panel's bending strength.

Ribbed Panel
A panel that has ribs with sloping sides and forms a trapezoidal shaped void at the side lap.

Ridge
The horizontal line formed by opposing sloping sides of a roof running parallel with the building length.

Ridge Cap
A transition of the roofing materials along the ridge of a roof; sometimes called ridge roll or ridge flashing.

Rigid Board Insulation
Typically, a rigid polyisocyanurate or polystyrene foam insulation.

Rigid Frame
A structural frame consisting of members joined together with moment connections so as to render the
frame stable with respect to the design loads, without the need for bracing in its plane.

Rolling Doors
Single or multiple leaf doors that open horizontally and are supported at the bottom on wheels that run on
a track.

Roll-up Door
A door that opens by traveling vertically.

Roof Assembly
All roof/ceiling components of the building envelope that are horizontal or sloped at an angle less than 60
degrees from horizontal.

Roof Covering
The exposed exterior roof surface consisting of panels.

Roof Curb
See “Curb, Roof”

Roof Jack
1. A synthetic rubber boot or collar that is used to seal around round roof projections. (Also see “Flashing
Collar”.)
2. A metal bracket used to support toe-boards on steep-slope roofs.

Roof Live Load
Loads that are produced (1) during maintenance by workers, equipment, and materials, and (2) during the
life of the structure by movable objects and do not include wind, snow, seismic or dead loads.

Roof Overhang
A roof extension beyond the end wall or side wall of a building.

Roof Seamer
A machine that crimps or folds adjacent edges of standing seam metal roof panels together, to form a
seam.

Roof Slope
The tangent of the angle that a roof surface makes with the horizontal, usually expressed in units of
vertical rise to 12 units of horizontal run.

Roof Snow Load
That load induced by the weight of snow on the roof of the structure. Usually obtained by taking a fraction
of the “Ground Snow Load”.

Runway Bracket
A bracket attached to the column of a building frame which supports the runway beam for top-running cranes.

R-value (Thermal Resistance)
The reciprocal of the U-factor (thermal transmittance). Units of R and h•ft2/Btu. Higher R-values indicate a material’s ability to resist more heat flow.

S

“S” Shape
A hot rolled beam with narrow tapered flanges.

Sag Member
A tension member such as rods, straps or angles used to limit the deflection of a girt or purlin in the
direction of its weak axis.

Sandwich Panel
A panel used as covering consisting of an insulating core material with inner and outer metal skins.

Screwed Down Roof System
See “Through-Fastened Roof System”.

Scupper
An opening in a gutter or parapet wall that allows excess water to escape.

Sealant
A single-or multi-component polymeric or bituminous-based material used to weatherproof construction
joints where moderate movement is expected. The material comes in various grades: pourable, selfleveling,non-sagging, gun grade, and tapes.

Seam
1. The joint (sidelap) area formed by connecting two adjacent roof panels.
2. A joint formed by mating two separate sections of material.

Seaming Machine
A mechanical device that is used to close and seal the side seams of standing seam roof panels.

Secondary Framing
Members that carry loads from the building surface to the main framing. For example– purlins and girts.

Sectional Overhead Doors
Doors constructed in horizontally hinged sections. They are equipped with springs, tracks, counter

Seismic Load
The lateral load acting in any horizontal direction on a structural system due to the action of an
earthquake.

Self Drilling Screw
A fastener that combines the functions of drilling and tapping.

Self Tapping Screw
A fastener that taps its own threads in a predrilled hole.

Shear
The force tending to make two contacting parts slide upon each other in opposite directions parallel to
their plane of contact.

Shim
A piece of steel used to level base plates or align columns or beams.

Shop Primer Paint
The initial coat of primer paint applied in the shop.

Shoulder Bolt
A fastener used to attach wall and roof paneling to the structural frame. It consists of a large diameter
shank and a small diameter stud. The shank provides support for the panel rib.

Side Lap Fastener
A fastener used to connect panels together at their side lap.

Side Wall
An exterior wall that is perpendicular to the frames of a building system.

Sill
The bottom horizontal framing member of a wall opening such as a window or door.

Simple Span
A term used in structural design to describe a beam support condition at two points which offers no resistance to rotation at the supports.

Single Slope
A sloping roof in one plane. The slope is from one wall to the opposite wall.

Single Span
A building or structural member without intermediate support.

Single Standing Seam
A standing seam that utilizes one overlapping interlock between two panels.

Siphon Break
A small groove to arrest the capillary action of two adjacent surfaces. (Anti-Capillary Groove).

Skylight
A roof accessory to admit light, normally mounted on a curbed framed opening.

Slide Door
A single or double leaf door that opens horizontally by means of sliding on an overhead trolley.

Sliding Clip
A standing seam roof system hold down clip which allows the roof panel to move independently of the roof substructure.

Snap-on Cap
A cap that snaps over the vertical legs of some single standing or batten seam metal roof systems.

Snow Drift
See “Drift (Snow)”.

Snow Load
See “Roof Snow Load”.

Snug Tight
The tightness of a bolt in a connection that exists when all plies in a joint are in firm contact.

Soffit
A material that covers the underside of an overhang.

Soffit Vent
A pre-manufactured or custom built air inlet located in the soffit of a roof assembly.

Soil Pressure
The load per unit area a structure will exert through its foundation on the soil.

Solar Reflectance
The ratio of the reflected solar flux to the incident solar flux.

Solar Spectrum
Radiation originating from the sun, including ultraviolet, visible, and near-infrared radiation. Approximately
99% of solar energy lies between wavelengths of 0.3 to 3.5 micrometers.

1. Ultraviolet (UV) 3% of total energy (responsible for sunburn)
2. Visible (VIS) 40% of total energy (visible light)
3. Infrared (IR) 57% of total energy (felt as heat)

Soldier Column
An intermediate column used to support secondary structurals; not part of a main frame or beam and
column system.

Span
The distance between supports of beams, girders, or trusses.

Specification (Metal Building System)
A statement of a set of Metal Building System requirements describing the loading conditions, design
practices, materials and finishes.

Splice
A connection in a structural member.

Splice Plate
1. See “Butt Plate”
2. In Roofing, a metal plate placed underneath the joint between two sheets of metal.

Spud Wrench
A tool used by erectors to line up holes and to make up bolted connections; a wrench with a tapered
handle.

Square
1. The term used for an area of 100 square feet.
2. A 900 angle.

Stainless Steel
An alloy of steel that contains a high percentage of chromium to increase corrosion resistance. Also may
contain nickel or copper.

Standing Seam
Side joints of roof panels that are arranged in a vertical position above the drainage plane of the panels or
flashings.

Standing Seam Roof System
A standing seam roof system is one in which the side laps between the roof panels are arranged in a
vertical position above the roof line. The roof panel system is secured to the roof substructure by means
of concealed hold down clips attached with screws to the substructure, except that through fasteners may
be used at limited locations such as at ends of panels and at roof penetrations.

Stiffener
1. A member used to strengthen a plate against lateral or local buckling. Usually a flat bar welded
perpendicular to the longitudinal axis of the member.

2. A formed shape in a metal panel that reduces the effect of oil canning in the panel's flat area.
Sometimes called "stiffener rib", or "stiffener flute".

Stiles
The vertical side members of framed and paneled doors.

Stitch Screw
A fastener connecting panels together at the sidelap.

Stress
A measure of the load on a structural member in terms of force per unit area.

Structural Panel
A panel that is capable of spanning between structural supports and can resist snow, dead, live,
concentrated and wind loads without the benefit of any substrate material.

Strut
A member fitted into a framework that resists axial compressive forces.

Stud
A vertical wall member to which exterior or interior covering or collateral material may be attached. May be either load bearing or non-load bearing.

Substrate
The surface upon which the roofing or waterproofing membrane is placed (i.e. structural deck, plywood or
insulation).

Suspension System
The system (rigid or flexible) used to suspend the runway beams of underhung or monorail cranes from the rafter of the building frames.

T

Tapered Members
A built up plate member consisting of flanges welded to a variable depth web.

Tapered Tread Wheels
End truck wheels with treads that are tapered, the large diameter being toward the center of the span.

Temperature Reinforcing
Light weight deformed steel rods or wire mesh placed in concrete to resist possible cracks from thermal
expansion or contraction.

Tensile Strength
The longitudinal pulling stress a material can bear without tearing apart.

Tension Forces
Forces acting on a member tending to elongate it.

Thermal Block
A thermal insulating material that is placed between the metal building roof and the compressed insulation over the purlins. Also known as a “thermal spacer block”.

Thermal Conductance (C-factor)
The time rate of heat flow through unit area of a body induced by unit temperature difference between the

body surfaces. Units for C are Btu / (ft2 × °F) [Imperial system] or Watts / (m2 × °K) [SI system]. See
“Thermal resistance”.

Through-Fastened Roof System
A through-fastened roof system is one in which the roof panels are attached directly to the roof
substructure with fasteners which penetrate through the roof sheets and into the substructure.

Thrust
The horizontal component of a reaction usually at the column base.

Ton
2000 pounds.

Torque Wrench
A wrench containing an adjustable mechanism for measuring and controlling the amount of torque or
turning force to be exerted – often used in tightening nuts and bolts.

Track
A metal way for wheeled components; specifically, one or more lines of ways, with fastenings, ties, etc.,
for a craneway, monorail or slide door.

Translucent Light Panels
Panels used to admit light.

Transverse
The direction parallel to the main frames.

Trapezoidal Panel
A panel configuration whose edge profile forms an open geometric form, roughly in the shape of a
trapezoid.

Tributary Area
The area directly supported by the structural member between contiguous supports.

Trim
The light gauge metal used in the finish of a building, especially around openings and at intersections of
surfaces. Often referred to as flashing. When contrasted, “trim” is generally more decorative, while
“flashing” serves more as functional weatherproofing.

Trolley (Crane)
The unit carrying the hoisting mechanism.

Trolley Frame (Crane)
The basic structure of the trolley on which are mounted the hoisting and traversing mechanisms.

Truss
A structure made up of three or more members, with each member designed to carry a tension or
compression force. The entire structure in turn acts as a beam.

Turn-of-the-Nut Method
A method for pre-tensioning high strength bolts. The nut is turned from the “Snug tight” position,
corresponding to a few blows of an impact wrench or the full effort of a man using an ordinary spud
wrench, the amount of rotation required being a function of the bolt diameter and length.

Twist Off Bolts
Bolts with a segment which shears off at a predetermined torque during bolt tightening. These bolts utilize a specially designed wrench for proper installation.

U

UBC
Uniform Building Code.

Underlayment
A secondary waterproofing sheet material installed between the substrate and the roof panels, usually
used in hydrokinetic roof construction. Some types may be self-adhering.

Uplift
1. See “Wind Uplift”
2. Upward force at a column base caused by applied building loads or building geometry.

V

Valley
An architectural detail created where two roof planes intersect, usually having ridge lines at right angles to
each other.

Valley Gutter
A channel used to carry off water from the “V” of roofs of multi-gabled buildings.

Vapor Barrier
Material used to retard the flow of vapor or moisture to prevent condensation from forming on a surface.

Vent
An opening designed to exhaust air, heat, water vapor or other gas from a building or a building component to the atmosphere.

Ventilation
The process of supplying or removing air by natural or mechanical means to or from any space.

W

“W” Shape
A hot rolled member with parallel flanges.

Wainscot
Wall material used in the lower portion of a wall that is different from the material in the rest of the wall.

Walk Door
See “Personnel Door”.

Wall Covering
The exterior wall surface consisting of panels or other material.

Web
That portion of a structural member between the flanges.

Web Member
A secondary structural member interposed between the top and bottom chords of a truss.

Web Stiffener
See “Stiffener”.

Wheel Base
Distance from center-to-center of outermost crane wheels.

Wheel Load
The vertical force without impact produced on a crane wheel bearing on a runway rail or suspended from a runway beam. Maximum wheel load occurs with the crane at rated capacity and the trolley positioned to
provide maximum vertical force at one set of wheels.

Width
The dimension of the building measured parallel to the main framing from sidewall to sidewall.

Wind Column
A vertical member designed to withstand horizontal wind loads.

Wind Load
The load caused by the wind from any horizontal direction.

Wind Uplift
The differential pressure resulting from the deflection of wind at roof edges, roof peaks or obstructions, causing a drop in air pressure immediately above the roof surface. This pressure, combined with “Internal Pressure”, produces an upward force on the roof components. In “Built-Up Roofing”, wind uplift may also
occur because of the introduction of wind pressure underneath the membrane and roof edges, where it can cause the membrane to balloon and pull away from the deck.

X

X-Bracing
Bracing system with members arranged diagonally in both directions to form an “X”. See “Bracing”.

Z

“Z” Section
A member cold formed from steel sheet in the shape of a “Z”.

Zinc-Aluminum Coated
Steel coated with an alloy of zinc and aluminum to provide corrosion resistance.